

DETAILED ACTION

1. Claims 1,4,6,8-9,11,14,16,18-20,22,24,26-27,29-32,34,36-41,43,45-48 are allowed.
2. Examiner acknowledges applicants' amendment to claims 1,11,20,27,40 as filed with RCE on 4/28/2009.
3. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e) in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid as filed on 4/28/2009, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.
4. Examiner acknowledges applicant's amendment filed on 8/25/2008
5. Claims 1, 11, 13-16, 18-20, 27, 29, 33-40 have been amended [8/25/2008].
6. Claims 2, 7, 10, 12,17,25,28 have been cancelled.
7. In view of applicant's amendment to claims 13-16,18-19,33-39, the claim objections as set forth in the previous office action is hereby withdrawn.

Claim Rejections - 35 USC § 112

8. In view of applicant amendment to claims 1,3-6,8-11,13-16,18-24,26-27,29-48, the rejection under 35 USC 112 first paragraph as set forth in the previous office action is hereby withdrawn.

Claim Rejections - 35 USC § 101

9. In view of applicant's canceling amended claim 27, the rejection under 35 USC 101 as set forth in the previous office action is hereby withdrawn

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10. In view of applicant's canceling claim 10, the rejection under 35 USC 101 as set forth in the previous office action is hereby withdrawn.

Interview:

11. Applicant's Attorney Joseph F. Oriti, Reg.No. 47,835 is thanked for the telephone interview on 08 May 2008. During that telephone interview Joseph F. Oriti granted authorization to ***amend claims 4,6,14,16,22,24,34,36,43,45*** and ***cancel claims: 3,5,13,15,21,23,33,35,42,44***

EXAMINER'S AMENDMENT

12. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Pursuant to MPEP 606.01 the Title is changed to read

***--SYSTEM AND METHOD FOR ONLINE ANALYTICAL PROCESSING USING
DIMENSION ATTRIBUTES AND MULTIPLE HIERARCHICAES WHERE FIRST
HIERARCHY HAS AT LEAST ONE ATTRIBUTE FROM THE DEFINED DIMENSION
NOT PRESENT IN THE SECOND HIERARCHY --***

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The application has been amended as follows:

In the Claims

1. (Previously Presented) A method for improving data processing in connection with a database having restrictions therein, said method comprising:

defining a dimension comprising a plurality of attributes;

assigning each attribute to a respective column of said database having restrictions therein;

defining relationships between said attributes of the defined dimension, said defined relationships not being subject to said restrictions of said database, said defined relationships establishing a first hierarchy of the attributes with respect to the defined dimension;

defining new relationships between said attributes of the defined dimension, said new defined relationships establishing a second hierarchy of the attributes with respect to the defined dimension:

said new relationships not being subject to said restrictions of the database; and

said new relationships of the second hierarchy modifying at least one relationship of the first hierarchy between said attributes; and

accessing said database via a query that employs at least one of the first hierarchy and the second hierarchy of said dimension without modifying the dimension, and displaying a result corresponding to the query to a user,

wherein the first hierarchy and the second hierarchy share at least one common attribute from the defined dimension, the first hierarchy has at least one attribute from

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the defined dimension not present in the second hierarchy, and the second hierarchy has at least one attribute from the defined dimension not present in the first hierarchy.

2. (Canceled)

3. (Canceled).

4. (Currently Amended) A method in accordance with claim [[3]] 1, wherein each hierarchy defines a drill down path for accessing said database.

5. (Canceled)

6. (Currently Amended) A method in accordance with claim [[3]] 1, wherein said act of defining said at least one hierarchy is independent of said database.

7. (Canceled)

8. (Original) A method in accordance with claim 1, wherein said database is a relational database.

9. (Original) A method in accordance with claim 1, wherein said dimension is

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utilized with an on line analysis processing (OLAP) system.

10. (Canceled)

11. (Previously Presented) A computer-readable storage medium having computer-executable instructions for improving data processing in connection with a database having restrictions therein, by performing acts comprising:

defining a dimension comprising a plurality of attributes;

assigning each attribute to a respective column of said database having restrictions therein;

defining relationships between said attributes of the defined dimension, said defined relationships not being subject to said restrictions of said database, said defined relationships establishing a first hierarchy of the attributes with respect to the defined dimension;

defining new relationships between said attributes of the defined dimension, said new defined relationships establishing a second hierarchy of the attributes with respect to the defined dimension:

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said new relationships not being subject to said restrictions of the database; and

said new relationships of the second hierarchy modifying at least one relationship of the first hierarchy between said attributes; and

accessing said database via at least one of the first and second hierarchies of said dimension without modifying the dimension,

wherein the first hierarchy and the second hierarchy share at least one common attribute from the defined dimension, the first hierarchy has at least one attribute from the defined dimension not present in the second hierarchy, and the second hierarchy has at least one attribute from the defined dimension not present in the first hierarchy.

12. (Canceled)

13. (Canceled)

14. (Currently Amended) A computer-readable storage medium in accordance with claim [[13]] 11, wherein each hierarchy defines a drill down path for accessing said database.

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15. (Canceled).

16. (Currently Amended) A computer-readable storage medium in accordance with claim ~~[[13]]~~ 11, wherein said act of defining said at least one hierarchy is independent of said database.

17. (Canceled)

18. (Previously Presented) A computer-readable storage medium in accordance with claim 11, wherein said database is a relational database.

19. (Previously Presented) A computer-readable storage medium in accordance with claim 11, wherein said dimension is utilized with an on line analysis processing (OLAP) system.

20. (Previously Presented) A system for accessing a database having restrictions therein, said system comprising:

a processor coupled to a storage device, said storage device comprising said database;

a first definition component for defining a dimension comprising a plurality of attributes;

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an assignment component for assigning each attribute to a respective column of said database;

defining relationships between said attributes of the defined dimension, said defined relationships not being subject to said restrictions of said database, said defined relationships establishing a first hierarchy of the attributes with respect to the defined dimension, said second component defining new relationships between said attributes of the defined dimension, said new defined relationships establishing a second hierarchy of the attributes with respect to the defined dimension:

said new relationships not being subject to said restrictions of the database; and

said new relationships of the second hierarchy modifying at least one relationship of the first hierarchy between said attributes; and

an access component for allowing access to said database via at least one of the first and second hierarchies of said dimension without modifying the dimension,

wherein the first hierarchy and the second hierarchy share at least one common attribute from the defined dimension, the first hierarchy has at least one attribute from the defined dimension not present in the second hierarchy, and the second hierarchy

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has at least one attribute from the defined dimension not present in the first hierarchy.

21. (Canceled)

22. (Currently Amended) A system in accordance with claim [[21]] 20, wherein each hierarchy defines a drill down path for said access component.

23. (Canceled)

24. (Currently Amended) A system in accordance with claim [[21]] 20, wherein said third definition component defines said at least one hierarchy independent of said database.

25. (Canceled)

26. (Original) A system in accordance with claim 20, wherein said system is utilized with an on line analysis processing (OLAP) system.

27. (Previously Presented) A system embodied in computer hardware, the system for accessing a database having restrictions therein, said system comprising:

means for defining a dimension comprising a plurality of attributes;

means for assigning each attribute to a respective column of said database having restrictions therein;

means for defining relationships between said attributes of the defined dimension, wherein said defined relationships are not subject to said restrictions of said database, said defined relationships establishing a first hierarchy of the attributes with respect to the defined dimension;

means for defining new relationships between said attributes of the defined dimension, said new defined relationships establishing a second hierarchy of the attributes with respect to the defined dimension, wherein:

said new relationships are not subject to said restrictions of the database; and
said new relationships of the second hierarchy modify at least one relationship of the first hierarchy between said attributes; and;

means for accessing said database via at least one of the first hierarchy and the second hierarchy of said dimension without modifying the dimension,
wherein the first hierarchy and the second hierarchy share at least one common

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attribute from the defined dimension, the first hierarchy has at least one attribute from the defined dimension not present in the second hierarchy, and the second hierarchy has at least one attribute from the defined dimension not present in the first hierarchy.

28. (Canceled)

29. (Previously Presented) A system in accordance with claim 27, wherein at least one of the first hierarchy and the second hierarchy is defined independent of said database.

30. (Original) A system in accordance with claim 27, wherein said system is an on line analysis processing (OLAP) system.

31. (Original) A system in accordance with claim 27, wherein said means for defining a dimension, means for assigning, means for defining relationships, means for accessing and means for defining at least one hierarchy comprise at least one application programming interface (API).

32. (Previously Presented) A computer-readable storage medium in accordance with claim 11 comprising a data structure comprising:

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the dimension comprising the plurality of attributes, wherein each attribute is bound to a column in a database; and

a logical structure indicative of relationships between said plurality of attributes, wherein said relationships are not subject to said restrictions placed on said database.

33. (Canceled)

34. (Currently Amended) A computer-readable storage medium in accordance with claim ~~[[33]]~~ 32, wherein each hierarchy provides a drill down path for accessing said database.

35. (Canceled).

36. (Currently Amended) A computer-readable storage medium in accordance with claim ~~[[33]]~~ 32, wherein each sequence is defined independent of said restrictions associated with said database.

37. (Previously Presented) A computer-readable storage medium in accordance

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with claim 32, wherein said logical structure is defined independent of said restrictions associated with said database.

38. (Previously Presented) A computer-readable storage medium in accordance with claim 32, wherein said database is a relational database.

39. (Previously Presented) A computer-readable storage medium in accordance with claim 32, wherein said database is capable of being utilized with an online analytical processing (OLAP) system.

40. (Previously Presented) A method for retrieving data from a database having restrictions therein, said method comprising:

receiving a data retrieval request including a dimension, wherein:

said dimension includes a plurality of attributes;

each attribute is assigned to a respective column of said database;

at least one relationship between said attributes of the defined dimension is defined;

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said at least one defined relationship not being subject to said restrictions of said database, said defined relationships establishing a first hierarchy of the attributes with respect to the defined dimension;

new relationships are defined between said attributes of the defined dimension, said new defined relationships establishing a second hierarchy of the attributes with respect to the defined dimension;

said new relationships not being subject to said restrictions of the database; and

said new relationships of the second hierarchy modifying at least one relationship of the first hierarchy between said attributes; and

retrieving said data from said database via a query that employs_at least one of the first and second hierarchies of said dimension without modifying the dimension, and displaying a result corresponding to the query_ to a user,

wherein the first hierarchy and the second hierarchy share at least one common attribute from the defined dimension, the first hierarchy has at least one attribute from the defined dimension not present in the second hierarchy, and the second hierarchy has at least one attribute from the defined dimension not present in the first hierarchy.

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41. (Original) A method in accordance with claim 40, further comprising:
providing said retrieved data in response to said data retrieval request.

42. (Canceled)

43. (Currently Amended) A method in accordance with claim [[42]] 40, wherein
each hierarchy provides a drill down path for accessing said database.

44. (Canceled)

45. (Previously Presented) A method in accordance with claim [[42]] 40, wherein
each sequence is defined independent of said restrictions associated with said
database.

46. (Previously Presented) A method in accordance with claim 40, wherein said
relationships between said attributes are defined independent of said restrictions
associated with said database.

47. (Original) A method in accordance with claim 40, wherein said database is a
relational database.

48. (Original) A method in accordance with claim 40, wherein said database is
capable of being utilized with an online analytical processing (OLAP) system.

Reasons for allowance

Claims 1,4,6,8-9,11,14,16,18-20,22,24,26-27,29-32,34,36-41,43,45-48 are allowed.

The following is an examiner's statement of reasons for indication of allowable subject matter.

The present invention is directed to multiple hierarchy dimension is used to access a relational database in an OLAP system, where defining dimension that including attributes, establishing relationship between attributes. These relationships are defined independent of any restrictions associated with the database. The attributes and their relationships define the dimension and its constraints.

The closet prior art Pedersen et al. US Patent No. 7133865 is directed to making OLAP hierarchies summarisable, more specifically transforming general on-line analytical processing hierarchies into summarizable hierarchies with respect to pre aggregation. Pedersen also teaches aggregation normalize a multidimensional object including a set of facts comprising a plurality of facts mapped on a plurality of dimensions having dimension values organized into categories of dimension values based on a partial ordering, the multidimensional object comprising mappings of links between dimension values within each dimension [see Abstract, col 6, line 23-33, fig 2-4].

The closest prior art Castelli et al. US Patent No. 6535872 is directed to generating a view element data structure of elements representing multiple-attribute

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tabular data particularly converting tabular data into a multidimensional data structure where each functional attribute of the relational data is mapped to a dimension in the lattice, and each cell in the lattice corresponds to an aggregation over records in the data table for example multidimensional OLAP as detailed in fig 2, Abstract, col 4, line 26-42.

It is however, noted that the prior art of record Pedersen et al. US Patent No. 7133865 in view of Castelli et al. US Patent No. 6535872 either along or in combination fails to anticipate or render obvious, the recited feature “accessing said database via a query that employs at least one of the first hierarchy and the second hierarchy of said dimension *without modifying the dimension, wherein the first hierarchy and the second hierarchy share at least one common attribute from the defined dimension, the first hierarchy has at least one attribute from the defined dimension not present in the second hierarchy, and the second hierarchy has at least one attribute from the defined dimension not present in the first hierarchy*” in claim 1,11,20,27,40

These features, together with the other limitations of the independent claims are novel and non-obvious over the prior art of record. The dependent claims 4,6, 8-9,14,16,18-19,22,24,26,29-32,34,36-39,41,43,45-48 being definite, enabled by the specification, and further limiting to the independent claims is also allowable.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance".

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alam, Hosain, T, can be reached on (571) 272-3978. The fax phone numbers for the organization where the application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free)

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